

CLAIMS

5 1. A computer network having improved reliability in data transmissions, comprising:

Sub A1  
an interpreter in a switch for interpreting a special multicast address in a packet received by said switch, said switch in response to receipt of a packet having said special multicast address, replicating said packet by transmitting identical copies of said packet on a plurality of ports of said switch;

10 a first router for receiving a first copy of said packet having said special multicast address transmitted from a first port of said plurality of ports of said switch, and a second router for receiving a second copy of said packet having said special multicast address, said second packet transmitted by a second port of said plurality of ports of said switch;

15 a first plurality of subsequent routers connected to said first router along an intended path for said first copy of said packet, said intended path having a plurality of links, and said links assigned a low cost in a Link State Packet Routing sense;

20 a second plurality of routers connected to said second router along an intended path for said second copy of said packet, said intended path having a plurality of links, and said links assigned a low cost in a Link State Packet Routing sense, said first plurality of routers connected to said second plurality of routers by links having assigned high costs in a Link State Packet Routing  
25 sense.

2. A network device for forwarding voice packets on a computer network, comprising:

an input port for receiving said voice packet;

5 a plurality of output ports assigned for transmitting said voice packet out of said network device in the event that a received packet carries a special multicast address in a layer 2 destination address field of said received packet;

10 a circuit to read said layer 2 destination address field of said received packet, and in the event that said special multicast address is found in said layer 2 destination address field of said received packet, to interpret said special multicast address as indicating that said received packet is said voice packet, and to transfer said voice packet to said plurality of output ports for transmission of replica packets of said voice packets through different paths in said computer network.

15 3. The apparatus of claim 2, further comprising: said network device is a layer 2 switch.

4. The apparatus of claim 2, further comprising: said network device is a router.

20 5. A method of improving reliability in data communications over a computer network, comprising:

receiving a voice data packet by a network device, replicating said voice data packet, and transmitting replica packets onto a first link and a second link;

25 assigning low cost to links, including said first link, in a first desired path through said computer network, said cost used by Link State Packet Routing protocol (LSP protocol) to select a route through said network;

assigning low cost to links, including said second link, in a second desired path through said computer network; and,

assigning <sup>higher</sup> high costs to links between said first desired path and said second desired path, so  
5 that in response to assigning low costs to said first desired path and assigning <sup>high</sup> low cost to said second desired path, LSP protocol selects said first desired path and said second desired path through said network, and in response to high costs assigned to said links between said first and said second desired paths, LSP does not select convergence of said first and said second desired paths when said first and said second desired paths are operative, and LSP routing selects convergence of said first and said second desired path upon failure of a link in either said first and said second desired path.

6. The method of claim 5 further comprising:

transmitting a voice data packet by a first digital telephone to a first network device;

transmitting, by said first network device, a replica packet of said voice data packet onto said first link for transmission through said first desired path through said computer network to a second network device;

transmitting, by said first network device, a replica packet of said voice data packet onto said second link for transmission through said second desired path through said computer network to said second network device;

25 converting by a second digital telephone a first replica packet of said voice data packet received by said second network device into audible sound, and discarding any subsequently received replica packets of said voice data packet.

7. The method of claim 6 further comprising: selecting said first replica packet of said voice data packet by said second network device.

8. The method of claim 6 further comprising: selecting said first replica packet of said voice data packet by said second digital telephone.

9. The method of claim 6 further comprising: selecting said first network device to be a layer 2 switch.

10. The method of claim 6 further comprising: selecting said first network device to be a router.

11. The method of claim 6 further comprising:

writing a sequence number into said voice data packet by said first digital telephone;

writing said sequence number into each said replica packet;

using said sequence number to determine the first received replica of said voice data packet by said second network device.

12. A computer readable device having instructions written thereon for practicing the method of claim 5.

13. Electromagnetic signals travelling on a computer network, said electromagnetic signals carrying instructions for practice of the method of claim 5.

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